



Catherine Cerri, General Manager

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June 16, 2020

Patty Kouyoumdjian
Lahontan Regional Water Quality Control Board
15095 Amargosa Road, Bldg 2, Ste 210
Victorville, CA 92394

Re: Lake Arrowhead CSD Tracer Study WDID 6B361904003

Dear Patty Kouyoumdjian,

The University of Nevada, Las Vegas (UNLV), and the United States Bureau of Reclamation (USBR) have completed the dye tracer study with the cooperation of the Lake Arrowhead Community Services District (LACSD) and Arrowhead Lake Association (ALA). The Lahontan Regional Water Quality Control Board, through Investigative Order No. R6T-2019-0262, requested that a technical report of the study's results and conclusions be submitted by June 30, 2020.

As you are aware, the SARS-CoV2 pandemic has ordered the closure of many institutions and laboratories as part of the effort to slow the spread of the virus. This has created a delay in the ability to receive the data necessary to complete the technical report. We are asking for an extension of time until March 31, 2021 so we may receive and analyze the data necessary to prepare the report. Please see the attached request from our partner at UNLV.

Sincerely,

A handwritten signature in blue ink, appearing to read "Catherine Cerri", is written over a light blue horizontal line.

Catherine Cerri
General Manager

Attachments:

1. Letter request from David E. James, PhD, PE. F.NSPE, Associate Professor, University of Nevada, Las Vegas dated June 15, 2020
2. 13267 Letter for Lake Arrowhead Dye Tracer Study from Patty Kouyoumdjian, Executive Officer, Lahontan Regional Water Quality Control Board dated October 30, 2019

cc: David E. James, PhD. PE. F.NSPE, Associate Professor, University of Nevada, Las Vegas
Meghan Thiemann, United States Bureau of Reclamation



Ms. Catherine Cerri, General Manager
Lake Arrowhead Community Services District
27307 Calif Highway 189
Blue Jay, CA 92317

June 15, 2020

Request for Extension to March 31, 2021. Lake Arrowhead Tracer Study Technical Report

Dear Ms. Cerri,

UNLV would like to request an extension of deadline for submission of its tracer study and hydrodynamic model technical report to LACSD and the Lahontan Regional Water Quality Control Board from June 30, 2020 until March 31, 2021.

While UNLV was able to successfully complete its tracer study in Lake Arrowhead Reservoir during early December 2019 and then initiate data analyses, UNLV closed all laboratories in mid-March 2020 in response to the SARS-CoV2 pandemic. While we have been able to conduct work remotely, we have not been able to staff up the work effort for data analyses and report assembly as had been originally planned, and our work effort has slowed.

Social distancing guidelines, physical barriers and disinfection procedures must first be planned, reviewed by university administration, and implemented for all laboratories, offices and classrooms before laboratories can open later this summer. Students will return to campus in August 2020.

The combined effect of lab closures and requirement to implement new procedures to limit the spread of the virus, have slowed UNLV's ability to complete the project by reducing the number of people available to continue chemical and data analyses and write the report. Once labs have reopened, we expect that we can resume work later this summer and continuing into fall, with technical review beginning in late fall and continuing into early 2021.

Could you please forward our request to delay the report to March 31, 2021 to the Lahontan Regional Water Quality Control Board for their review and decision?

Thank you for considering this request.

Please contact me on my mobile telephone 702-595-1209 if you have any questions or concerns.

Sincerely,

David E. James, PhD, PE, FNSPE
Associate Professor, Civil and Environmental Engineering and Construction
Director of Solar and Renewable Energy Programs

Cc: Meghan Thiemann, US Bureau of Reclamation, Boulder City



Lahontan Regional Water Quality Control Board

October 30, 2019

WDID No.: 6B361904003

Catherine Cerri, General Manager
Lake Arrowhead Community Services District
P.O. Box 700
Lake Arrowhead, CA 92352

Investigative Order No. R6T-2019-0262 – Request for Technical Report - Lake Arrowhead Tracer Study, Lake Arrowhead Community Services District, Lake Arrowhead, San Bernardino County

The Lahontan Regional Water Quality Control Board (Water Board) has reviewed the Request to Waive Submittal of a Report of Waste Discharge (Report)¹ for a proposed project to conduct a dye tracer study (Study) at Lake Arrowhead. The Report was submitted by the Lake Arrowhead Community Services District (District). Pursuant to the California Water Code, section 13267, I am requesting by **June 30, 2020**, a technical report(s) describing results of the Study and any conclusions with respect to water quality. Failure to provide the requested information may result in further enforcement action by the Water Board.

Dye Tracer Study Summary

The proposed Study is a cooperative effort between the District, the Arrowhead Lake Association (ALA), and the United States Bureau of Reclamation (USBR) and the study will be completed by November 15, 2019. While the ALA provides access to the lake, the University of Nevada Las Vegas (UNLV) will conduct the study. The Study results may be used to determine the rates of horizontal movement of lake water at different depths and the rates of vertical mixing within the lake. The data obtained from the Study may be used to develop and support a feasibility study of alternatives for surface water augmentation by indirect potable reuse.

¹ The Report information was submitted by the District by email on May 23, 2017 (notification of a possible Dye Tracer Study in Lake Arrowhead), March 13, 2018 (notification of a planned Dye Tracer Study), July 26, 2018 (request for a waiver of the need to file a report of waste discharge and test protocol), and April 10, 2019 (response to Water Board staff comments sent on October 24, 2018).

The Study will use Rhodamine WT (RWT) dye and sucralose, an artificial sweetener, as co-tracers in the study. Collected data results of these two tracers will be used to develop a computer analytical model simulating dilution and assimilation of a hypothetical treated recycled water discharge into the lake under varying weather conditions. This potential future recycled water project is not part of the study.

Dye Tracer Discharge

The United States Environmental Protection Agency (USEPA) set 10 micrograms per liter ($\mu\text{g/L}$) as the advisory limit for RWT dye when it is used as a tracer near drinking water treatment plant intakes. Based on the information provided by the District, the tracer concentrations would be $0.067 \mu\text{g/L}$ when fully mixed with lake water if no degradation were to occur.

Sucralose is considered a safe general-purpose sweetener by the United States Food and Drug Administration (USFDA). According to the USEPA, sucralose may cause toxicity to aquatic organisms at concentrations greater than $1,123,000 \mu\text{g/L}$.

Monitoring and reporting requirements are necessary to determine how potential application of RWT and sucralose tracers in Lake Arrowhead may impact aquatic organisms and drinking water intakes. The burden, including costs, of these reports bears a reasonable relationship to the need for the report and the benefits to be obtained from the reports.

Monitoring and Reporting Requirements

Pursuant to CWC, section 13267, the District is required to submit technical reports to the Water Board by **June 30, 2020**. The following specific information must be included in the final technical reports:

1. Map of the two tracer plume's concentrations, including the areal extent and depth profiles at hourly intervals until the maximum concentration of RWT is equal to or less than $1 \mu\text{g/L}$, as determined from the static sampling and any mobile sampling efforts. Analysis must include discussion on the relative impacts of dilution, dispersion, and degradation of the dye concentration.
2. All sampling and analytical results must be included in the report.
3. Brief summary of any operational problems encountered before, during, and/or after the dye application.
4. Analysis of the influence of environmental factors (e.g., water temperature, wind speed and direction) on the movement and degradation of the dye.
5. Summary report of individual dye applications and conclusions.

6. Analysis of the influence of environmental factors on the dye.
7. Subsequent recommendations for the best season and conditions for the potential use of recycled water to augment water in Lake Arrowhead.

Failure to submit this information could result in the District being liable civilly, in accordance with California Water Code, section 13268.

Please send all future correspondence to Lahontan@waterboards.ca.gov. Include in the subject line the project name: Lake Arrowhead CSD Tracer Study and waste discharge identification number: 6B361904003. If you have any questions, please call me at (530) 542-5414 or patty.kouyoumdjian@waterboards.ca.gov or Sergio Alonso, Water Resource Control Engineer, at (760) 243-7324 sergio.alonso@waterboards.ca.gov.



PATTY KOUYOUMDJIAN
EXECUTIVE OFFICER

cc: David E. James, PhD, University of Nevada
Stewart Reeves, Lake Supervisor, Arrowhead Lake Association
Tracy Vermeyen, US Bureau of Reclamation
Eric Zuniga, State Water Board Division of Drinking Water